

Register today for Early Bird Savings



**February 27-29, 2000
Albuquerque, New Mexico**

A two-day workshop focusing
on Inorganic Contaminants
including Arsenic, Perchlorate,
Radon, and the related
regulations that affect you

Sponsored by:



American Water Works Association
Dedicated to Safe Drinking Water

and



AWWA
**Research
Foundation**

Advancing the Science of Water®

Co-Sponsored by:

the United States
Environmental Protection Agency

Inorganic Contaminants Workshop



Inorganic contaminants are a significant challenge for utilities throughout the United States, particularly in the West and Southwest. Recent research has uncovered more effective ways of treating for inorganics that can make your life a lot easier. AWWA's Inorganic Contaminants Workshop is your chance to find out how the latest research applies to your utility.

Make sure you're ready for lower MCLs and the next wave of regulations. Join researchers, academicians, and your colleagues from across North America for a two-day workshop focused entirely on helping you cope with inorganic contaminants. This is your chance to meet, interact, and network with the people actually doing the research. Get advice on the problems you're having at your utility; find out how you can prepare for the next wave of regulations, get the scoop on what USEPA is planning.

An expert planning committee:

Michael McPhee, co-chair
Environmental Engineering
& Technology Inc.

Jeffrey Nash, co-chair
CH2M Hill

Gary Amy
University of Colorado

Kenneth Carlson
CH2M Hill

Steven Duranceau
Boyle Engineering Corp.

Nancy Kinner
University of New Hampshire

Thomas Sorg
USEPA

Take a look at the program; you'll see that sessions are moderated by experts from the workshop-planning committee and cover the issues that affect you. Register today.

Preliminary Program

Presentation topics or speakers may change

SUNDAY, FEBRUARY 27

Reception, Poster Presentations and Tabletop exhibits

(included with registration fee)

5:00 p.m.–6:30 p.m.

MONDAY, FEBRUARY 28

Opening General Session

8:30 a.m.–10:15 a.m.

Moderator: *Steve Duranceau*

1. Welcome
Jeff Nash, Mike MacPhee,
Planning Committee Co-chairs
2. New Mexico State Perspective
Robert Gallegos, Drinking Water
Administrator, State of New Mexico
3. Inorganic Contaminant Regulations
Steve Clark, USEPA
4. USEPA's Proposed Arsenic Regulation
Amit Kapadia, USEPA

10:15–10:30 a.m. Break

Arsenic Speciation and Oxidation

10:30 a.m.–12 noon

Moderator: *Tom Sorg*

1. Arsenic Speciation Methods
Dennis Clifford, University of
Houston
2. Oxidation of Arsenic III in Natural
Waters by Aeration
Jerry Lowry, Lowry Engineering
3. Arsenic III Oxidation by Chemical
Oxidants, UV and a Solid Oxidizing
Media
Ganesh Grurye, University of
Houston, *Dennis Clifford*

Bromide/Bromate

10:30 a.m.–12:00 noon

Moderator: *Mike MacPhee*

1. Bromine Formation and Reaction
Paul Westerhoff, Arizona State
University
2. Bromide Ion Incorporation Into
Brominated Disinfection By-products
Jinsik Sohn, University of Colorado,
Gary Amy

3. Optimization of Bromate Formation and *Cryptosporidium* Control in Drinking Water

Jaehong Kim, University of Illinois at Urbana-Champaign, *Mark Urban*, *Shinya Echigo*, *Roger Minear*, *Benito Marinas*

12:00–1:30 p.m. Lunch

Arsenic

1:30 p.m.–5:00 p.m.

Moderator: *Gary Amy*

1. Arsenic Occurrence Issues and Treatment Decisions From a State Perspective
Larry Scanlan, State of Utah
2. Implementation of the Arsenic Rule in New Hampshire
Bernie Lucey, State of New Hampshire
3. Impact of the New Arsenic Regulation on the City of Albuquerque
John Stomp, City of Albuquerque, *Mark Schmidt*, *Joseph Chwirka*

3:00–3:30 p.m. Break

4. Development of Arsenic Treatment, Compliance and Planning Strategies for the City of Phoenix.
Ramesh Narasimharn, *Narasimharn Consulting Services*, *Laxman Devkota*, *Robert Hollander*
5. Centrally Managed POU/POE Option for Compliance With the Arsenic Regulation
Jeff Kempic, USEPA
6. Potential Arsenic Problems Related to Groundwater Disinfection
Steve H. Reiber, HDR Engineering

Perchlorate Treatment for Drinking Water (AWWA Research Foundation)

1:30 p.m.–5:00 p.m.

Moderator: *Frank J. Blaha*

1. Removal of Perchlorate in Biologically Active Carbon Adsorption Systems
Jess Brown, University of Illinois at Urbana, *Vern Snoeyink*, *Sun Liang*

2. Treatability of Perchlorate in Groundwater Using Ion Exchange Technology

Anthony R. Tripp, *Dennis Clifford*, University of Houston

3. Effect of Zeta Potential on Perchlorate Rejection by Negatively Charged and Non-Charged Nanofiltration (NF) and Ultrafiltration (UF) Membranes
Yeomin Yoon, University of Colorado at Boulder, *Gary Amy*, *Sun Liang*, *John Pellegrino*

4. Designing Systems to Biologically Treat Perchlorate-Contaminated Water
Bruce Logan, *K. Kim*, *J. Miller*, *D. La Point*, Pennsylvania State University

5. Autohydrogenotrophic Perchlorate Reduction
Bruce Rittmann, Northwestern University, *Robert Nerenberg*

6. Perchlorate Control With Tailored GAC, Chemical Regeneration, and Thermal Reactivation/Destruction
Fred Cannon, Pennsylvania State University

5:00–6:30 p.m. Reception (included with registration fee)

TUESDAY, FEBRUARY 29

Radon

8:00 a.m.–11:15 a.m.

Moderator: *Nancy Kinner*

1. Cross-Media Considerations in Implementing Radon Removal Technologies
Joseph Drago, *Kennedy/Jenks Consultants*
2. Indoor Air Treatment of Radon-Multimedia Mitigation
Richard Sextro, Lawrence Berkeley Lab
3. Does GAC Have a Role in Treating Radon in Water?
Nancy McTigue, Environmental Engineering & Technology, *Dave Cornwell*, *Nancy Kinner*

9:30–9:45 a.m. Break

4. Title to be determined
Dave Huber, USEPA OGDW





5. Radium Removal for Potable Water Supplies by Ion Exchange and Electrodialysis Reversal
Kevin Dixon, New Jersey American Water Works, William Suchodolski, Andrew Why, Carol Storms, Judith Lorimer, Gary Coleman, Kevin Brown, Ken Christy, Eva Ibrahim
6. Indications of State Participation in the Multimedia Mitigation Program for Radon
Robert Raucher, Stratus Consulting

Arsenic Treatment

8:00 a.m.–11:15 a.m.

Moderator: *Tom Sorg*

1. Arsenic Removal by Full Scale Conventional Water Treatment Systems
Keith Fields, Battelle, Tom Sorg, Abraham Chen, Lili Wang
2. Arsenic Removal Studies and the Design of a 20,000 m³/d Plant in the UK
John Simms, John Shaw, Severn Trent Water
3. Arsenic Removal by Full-Scale Ion Exchange and Activated Alumina Water Treatment Systems
Lili Wang, Battelle, Tom Sorg, Abraham Chen, Keith Fields

9:30–9:45 a.m. Break

4. New Development in Arsenic Adsorption Technology for Potable Drinking Water Applications
Greg Gilles, PEI, Inc., B.E. Kemper, E. Mintz
5. Identification of Key Parameters Influencing the Treatment of Arsenic in Drinking Water via Membrane Technology
Philip Brandhuber, University of Colorado, Gary Amy
6. Evaluation of Three Arsenic Treatment Technologies for Albuquerque, New Mexico
Joseph D. Chwirka, CH2M Hill, Ken Carlson, Jerry Lowry, Bruce Thomson, James Lozier

11:15–11:30 a.m. Break

Chlorine Dioxide/Chlorite

11:30 a.m.–1:00 p.m.

Moderator: *Ken Carlson*

1. Impact of Chlorine in the Generation of Chlorine Dioxide on Disinfection Byproduct
Doug Rittman, El Paso Water Utilities
2. The Importance of Purity for Controlling Chlorine Dioxide By-products
Aaron Roseenblatt, CDG Technology Inc.
3. The Impact of Ferrous Reduction of Chlorite on Overall Process Performance
Rich Henderson, Colorado State University

Potpourri

11:30 a.m.–1:00 p.m.

Moderator: *Jeff Nash*

1. Chemical Reduction of Oxo-Anions From Drinking Water by Zero Valent Iron
Paul Westerhoff, Arizona State University
2. A Case History of Nitrate Control Through Watershed Management
Mark Johnson, Illinois-American Water Company
3. Influence of Inorganic, Anionic Ligands on Coagulation: Particle, NOM, and Ligand Removal
Gary C. Schafran, Old Dominion University, P. Pommerank, R. Cushing, P. McGlothlin, M. Hotaling, R. Hawkins

1:00 p.m.–2:00 p.m. Lunch (on your own)

Arsenic in Drinking Water—A New Mexico Perspective

2:00 p.m.–5:00 p.m.

Moderator: *John Stomp*

1. Summary of the NM Environment Department's Perspective on Arsenic in Drinking Water
Peter Maggiore, New Mexico Environment Department (invited)
2. The Impact of the Arsenic MCL on Public Water Systems in New Mexico
Steven Wust, New Mexico Environment Department

3. The Toxicology and Epidemiology of Arsenic: New Mexico's Experience
Floyd Frost, Lovelace Scientific Research Institute
4. New Developments in Arsenic Treatment Technologies
Tom Sorg, USEPA
5. Removal of Arsenic from Drinking Water: Current State of the Art
Joe Chwirka, CH2M Hill
6. Experience with Point-Of-Use Treatment Systems for Arsenic Removal
Bruce Thomson, University of New Mexico

Poster Presentations

Posters will be on display:

Sunday, February 27

5:00 p.m.–6:30 p.m.

Monday, February 28

8:30 a.m.–6:30 p.m.;

authors available 12:30–1:30 p.m.
and 5:00–6:30 p.m.

Tuesday, February 29

8:30 a.m.–11:30 a.m.

1. Arsenic Remediation of Pezzi Well via Adsorption
Will Raymond, Sierra Pacific Power Company
2. A Novel Adsorbent for As Removal
Yujung Chang, HDR Engineering
3. Removal of Metals and Radionuclides Using Apatite and Other Natural Sorbents
Bruce Thomson, University of New Mexico
4. Monroe Manages Mercury: A Unique Solution to a Unique Problem
Mark A. Carlson, CH2M Hill
5. Lessons Learned From Lead and Copper Monitoring
David Quinones, San Francisco PUC
6. A Simple Modification of Cation-Exchange Softening Process for Ammonium Ion Removal
Farida S. Goderya, Farnsworth & Wylie
7. Coagulation for Fluoride Control: Feasibility, Confirmation, and Implementation
Patricia L. McGlothlin, City of Colorado Springs

8. Removal of Hydrogen Sulfide from Groundwater
Steven J. Duranceau, Boyle Engineering Corp.
9. EnChem™: A New Low-Pressure and High-Flow Arsenic Removal System for Industrial and Potable Water
Josh H. Golden, Microbar Inc.
10. Utility of an Insoluble, On-Demand Oxidant for Analysis and Removal of Arsenic in Drinking Water
Timothy J. Badger, Affiniti Water Technologies, Eugene P. Bergemann, Paul K. Smith
11. Manganese: A Seasonal Water Nightmare in Raton, New Mexico
Daniel M. Campbell, Raton Water Works
12. Arsenic Adsorption Using Media G2-Bench Testing to Full-scale
Eric Winchester, ADI International, Inc.

Poster presentations are still available-call Clare Haas at (303) 347-6199 for more information.

Tabletop Exhibits

The American Water Works Association is pleased to offer tabletop display space at its 2000 Inorganic Contaminants Workshop.

The tabletop display will be held as follows:

Sunday, February 27

5:00 p.m.–6:30 p.m.

Staffed during reception

Monday, February 28

8:00 a.m.–6:00 p.m.

Staffed during breaks, lunch, and reception

Tuesday, February 29

8:00 a.m.–11:30 a.m.

Staffed during breaks

Companies interested in exhibiting should contact Tima Anderson at (303) 347-6190.

Registration Information

Full workshop registrations include:

- Sessions on Monday and Tuesday
- Lunch on Monday
- Receptions on Sunday and Monday
- One copy of the workshop notebook





To register please complete the registration form in this announcement and mail it with full payment (check or credit card) to:

AWWA Inorganics Workshop
6666 West Quincy Avenue
Denver, CO 80235
FAX: (303) 794-3951

A confirmation will be mailed to all registrants. Cancellations and requests for refunds should be sent to AWWA and must be in writing.

The workshop registration desk will be open:

Sunday 2:00 p.m.–5:00 p.m.
Monday 7:30 a.m.–5:00 p.m.
Tuesday 7:30 a.m.–1:00 p.m.

Hotel Reservations and Rates

A block of rooms has been reserved for workshop attendees at:

Wyndham Albuquerque Hotel
2910 Yale Boulevard SE
Albuquerque, NM 87106

Mention the AWWA Inorganics Workshop to receive the discounted rate of \$95.00 single/double occupancy. The hotel is conveniently located near the Albuquerque International Airport. Guests will enjoy spectacular views of the Sandia Mountains and the lights of Albuquerque. The deadline for guaranteed hotel reservations is January 30, 2000.

Airline Information:

Special airfares are available to workshop attendees. Attendees can book reservations through AWWA's official travel agency, TG World Wide, or through United, American, or Delta airlines directly.

Additional Discount! United, Delta, and American airlines are offering an additional discount to meeting attendees if they book and ticket at least 60 days in advance of their contracted travel dates. You can receive 10% off the lowest applicable fare or 15% off the unrestricted coach fare.

For more details, contact TG World Wide or the airlines directly.

To make airline or rental car reservations through TG World Wide call 1-800-411-9997 (in Colorado call (303) 799-4112) and ask for Amy Schantz. TG World Wide will obtain the lowest fare available in the Albuquerque market. The office is open Monday through Friday from 7:30 a.m.–5:30 p.m. Mountain Daylight Time.

You may also call the airlines directly:

United Airlines:

Call 1-800-521-4041 daily from 7:00 a.m. to 11:00 p.m. Eastern Daylight Time. Refer to AWWA Meeting Code No. 573HK.

Delta Air Lines:

Call 1-800-241-6760 daily from 8:00 a.m. to 11:00 p.m. Eastern Daylight Time. Refer to AWWA File No. 134083A.

American Airlines:

Call 1-800-433-1790 daily from 7:30 a.m. to 12 midnight Central Daylight Time. Refer to AWWA Star No. 12322

Student Registration

Student registrations cost \$50 and include admission to all technical sessions and meetings, lunch, receptions, and a copy of the workshop notebook. Only full-time students may use this special rate; students must include a letter from their college or university declaring their full-time student status with their registration form.

Workshop Materials

All workshop registrants and students will receive one copy of the workshop notebook that includes program information and extended abstracts.

Transportation

The hotel offers free 24-hour airport shuttle service from the airport to the Wyndham Albuquerque Hotel.



REGISTRATION/HOUSING RESERVATION FORM

AWWA Inorganic Contaminants Workshop • February 27–29, 2000 • Albuquerque, New Mexico

AWWA Member No. _____

☐ Individual ☐ Organization

☐ Mr. ☐ Mrs. ☐ Ms. ☐ Dr.

First Name (FOR BADGE) _____ M.I. _____ Last Name _____

Title _____

Company or Organization _____

Mailing Address _____

City _____ State/Prov. _____ Zip/Postal Code _____ Country _____

Telephone _____ FAX _____

E-mail _____

Name of Registered Spouse/Guest _____

☐ Check here if you have a disability and may require special accommodation to fully participate. You will be contacted by AWWA.

BUSINESS AND INDUSTRY Please circle the description below that best describes you.

A. Public Water Supply Utility—Municipally Owned

B. Public Water Supply Utility—Investor Owned

C. Governmental—Federal, State, Local

D. Consultant

E. Contractor

F. Private Industrial Systems or Water Wholesaler

G. Manufacturer of Equipment & Supplies,
Including Representatives

H. Distributors of Equipment & Supplies, Including
Representatives

I. Educational Institutions, Faculty and Students, Libraries, and
Other Related Organizations

J. Fully Retired

K. Research Lab

L. Other

REGISTRATION Check the items below for which you are registering.

REGISTRATION FEES

Member registering before
January 30, 2000

Nonmember & Member registering
on or after January 31, 2000

Technical Sessions & Exhibition

- ☐ A. Full Conference (includes Sunday reception, Monday lunch and evening reception) \$295
- ☐ B. Monday Only (includes lunch and evening reception) 195
- ☐ C. Tuesday Only 100
- ☐ D. Student 50

Extra Cost

- ☐ E. Spouse/Guest 25
- ☐ F. Monday Lunch (at \$30 each) 30

Total \$

Total \$

METHOD OF REGISTRATION PAYMENT

Registration forms MUST be accompanied with payment or a photocopy of purchase order.

- ☐ Personal Check ☐ Company Check Make checks payable to AWWA in U.S. funds.
- ☐ MasterCard ☐ American Express ☐ VISA ☐ Diners Club ☐ P.O.

Credit Card No. _____ Expiration Date _____

Signature _____

Housing Reservations (Please check required room type.)

Hotel ☐ Single (1 bed/1 person): \$95 + 10.56% tax ☐ Double (1 bed/2 people): \$95 + 10.56% tax

Arrival Date _____ Departure Date _____

Roommate name (if applicable) _____

DEPOSIT REQUIRED: All rooms require a deposit in the amount of one night's lodging. Credit card information is required or your reservation will not be processed. Your card will be debited by the hotel if you are a no-show or do not cancel 72 hours prior to arrival date. DO NOT SEND ROOM DEPOSIT CHECKS TO AWWA. Refunds will be made only on cancellation requests received 72 hours prior to the day of scheduled arrival.

FOR ROOM DEPOSIT: Credit Card No. _____ Exp. _____

Signature _____

Housing reservations received after January 30, 2000, will be accepted on a space-available basis, at convention rates, if such rooms remain. Forms received close to or after deadline may be placed in an overflow hotel. Telephone reservations cannot be accepted.

CANCELLATION POLICY

January 30, 2000 or Before: 25% administrative fee will be deducted from refund for registration cancellation. This is also the cutoff date for advance registration pricing.

January 31, 2000 or After: No refunds will be granted for cancellation. However, substitute registrants are welcome.

Call 800-926-7337 for substitutions.

To register for the conference, complete this registration form and mail with full payment or credit card information to:

AWWA Inorganics Workshop
6666 W. Quincy Ave.
Denver, CO 80235
FAX 303-794-3951

Registration/Confirmation will be mailed to all registrants whose forms are received by January 30, 2000.



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